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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/395,490	09/14/1999	ROBERT EVEREST JOHNSON	LUT-2-0023	6096
48116	7590	10/11/2007		
FAY SHARPE/LUCENT 1100 SUPERIOR AVE SEVENTH FLOOR CLEVELAND, OH 44114			EXAMINER BURD, KEVIN MICHAEL	
			ART UNIT 2611	PAPER NUMBER
			MAIL DATE 10/11/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Office Action Summary	Application No. 09/395,490	Applicant(s) JOHNSON ET AL.	
	Examiner Kevin M. Burd	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-6,9-15,21-28 and 30-34 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,3-6,9-15,27 and 28 is/are allowed.
- 6) ☒ Claim(s) 21-25 and 30-34 is/are rejected.
- 7) ☒ Claim(s) 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
 - 1. ☐ Certified copies of the priority documents have been received.
 - 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

1. This office action, in response to the request for continued examination (RCE) and amendment filed 8/29/2007 is a final office action.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/29/2007 has been entered.

Response to Arguments

3. The amendment to claims 1, 3-6 and 9-15 has overcome the previous rejection of the claims. The previous rejection is withdrawn.
4. Applicant's arguments with respect to claims 27 and 28 have been fully considered and are persuasive. These claims meet the three-prong analysis of identifying a 35 USC 112, sixth paragraph limitation recited in MPEP 2181. The previous rejection of the claims has been withdrawn.
5. Applicant's arguments filed 8/29/2007 regarding claims 21-25 and 30-34 have been fully considered but they are not persuasive. Jones discloses the receiver in figures 1 and 2 that samples 124 the received signal. The references are combined for the reasons stated in the previous rejection of the claims.

For these reasons and the reasons stated in the previous office action, the rejection of claims 21-25 and 30-34 are maintained and stated below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 21, 30 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones et al (US 5,920,808) in view of Shin et al (US 6,493,543)

Regarding claims 21, 30 and 34, Jones discloses an apparatus and method for adaptively predistorting a base band signal (figure 2). The predistorter 107 predistorts the received in-phase and quadrature component signals to compensate for the distortion of the power amplifier 115. The predistorted 800 ksps component signals from the predistorter 107 are received by the digital interpolator 209 (column 7, lines 22-29). The signals are upsampled in the digital interpolator to increase the sampling (column 7, lines 28-42). The interpolator filters the upsampled base band signal (column 7, lines 42-43). The output of the interpolator is a predistorted upsampled signal, which is converted to RF signal for transmission. A receiver retrieves samples of the RF signals and feeds these signals to the trainer 131 (figure 2).

Jones does not disclose the receiver being tuned to at least one specific frequency offset from a carrier frequency of the output signal. Shin discloses the control system 104 measures the energy of the distortion frequency components by measuring energy at a frequency or frequency offset from a carrier frequency. The feedback control signal on line 109 is coupled to the predistorter 105 for adjusting characteristics of the predistorter and thereby null the energy in the out-of-band signals on line 103 (column 5, lines 33-45). It would have been obvious for one of ordinary skill in the art at the time of the invention to incorporate the teachings of Shin into the apparatus and method of Jones to measure the energy of distortion frequency components and to remove out-of-band signals. This would remove noise from the signal to be transmitted and allow error free transmissions to be sent to the receiver.

7. Claims 22-24, 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones et al (US 5,920,808) in view of Shin et al (US 6,493,543) further in view of Perkins et al (US 5,963,549).

Regarding claims 22, 24, 31 and 32, the combination of Jones and Shin discloses an apparatus and method stated above. The combination of Jones and Shin does not disclose clipping the signal in the predistorter. Perkins discloses it is well known to clip signals in a predistortion unit to reduce power requirements prior to transmission. Using a lookup table memory technique helps achieve this lower power consumption (column 2, lines 30-44). It would have been obvious for one of ordinary

Art Unit: 2611

skill in the art at the time of the invention to use the predistortion unit of Perkins to clip a base band signal using a look up memory technique for the reason stated above.

Regarding claim 23, Perkins discloses the I and Q components are summed prior to recovering lookup table information (column 2, lines 30-44).

8. Claims 25 and 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones et al (US 5,920,808) in view of Shin et al (US 6,493,543) further in view of Perkins et al (US 5,963,549) as applied to claims 22-24, 31 and 32 above, and further in view of Miyashita (US 6,288,610).

Regarding claims 25 and 33, the combination of Jones, Shin and Perkins disclose an apparatus and method for adaptively predistorting a base band signal as stated above. The combination does not disclose using the lookup table technique to predistort the base band signal where the distortion characteristics are defined by polynomial equations having coefficients. Miyashita discloses the predistortion characteristics are defined by the polynomial equation shown in column 4, lines 60-68. The equation $g(x)$ is the expression of the envelope transfer function. It would have been obvious to incorporate the method of using a polynomial equation from a look up table to predistort a base band signal as disclosed in Miyashita into the combination to correct distortion impairing linearity which occurs in the amplifier (column 3, lines 31-33).

Allowable Subject Matter

9. Claims 1, 3-6, 9-15, 27 and 28 are allowed.
10. Claim 26 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


Art Unit: 2611

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Burd whose telephone number is (571) 272-3008. The examiner can normally be reached on Monday - Friday 9 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Payne can be reached on (571) 272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kevin M. Burd
10/2/2007


KEVIN BURD
PRIMARY EXAMINER